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09/738,591	12/15/2000	Jim Otter	60,246-116	1229

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EXAMINER

PARKER, FREDERICK JOHN

ART UNIT PAPER NUMBER

1762

DATE MAILED: 05/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/738591

Applicant(s)

Examiner

Group Art Unit

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE — 3 — MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 4/14/03

☒ This action is **FINAL**.

- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-5, 7-28 is/are pending in the application.

Of the above claim(s) 8-19 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-5, 7-26, 28 is/are rejected.

☒ Claim(s) 27 is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____

☐ Copies of the certified copies of the priority documents have been received

in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

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Response to Amendment

Claim Objections

1. The amendments in response to the Claim Objections of the Previous Office Action are acknowledged and appreciated, and the Examiner withdraws the objections.
2. Claim 27 is objected to because of the following informalities:
"maleicanhydride" should be two words (maleic anhydride). Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The amendments in response to the 35 USC 112 rejections of the Previous Office Action are acknowledged and appreciated, and the Examiner withdraws the rejections.
4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
5. Claim 24 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to

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reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no teaching in the specification that the roller assembly is heated, the only teaching is on page 4 that the temperature of the small roller is "controlled" to prevent rapid quenching; however, this could simply mean controlling the thermal conductivity of the roller material to prevent heat loss. This is simply no express or implied teaching of heating the roller assembly, and no page/ line citation of this limitation is provided by Applicants.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
7. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789. The references are cited for the reasons stated in the previous Office Action, and as discussed below in response to amendments and remarks. Applicants' comments and amendments have been carefully considered.

In determining patentability under 35 USC 103, the Examiner must consider the inquiries of *Graham v. Deere*, which are as follows:

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Applicants amended claim 1 to require applying, then adhering a plurality of particulates to a film and followed by adding the film to the transfer component. Applicants argue the combined prior art does not teach nor suggest the method of claim 1.

Bentley teaches laminating a corrosion-resistant polymer sheet to a metal heat exchanger part to permit flow and removal of condensed water. Polar particulates on the sheet is not taught. Kaneko et al teaches to apply by lamination a similar corrosion-resistant polymer sheet to similar heat exchanger parts, and then adding polar particulates to increase wettability and this increase efficiency of flow and removal of condensed water. After application of the particulates, the surface is roller squeezed and heated to cause adhesion of particles.

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The Examiner recognizes that Applicants' claim 1 applies the particulates to the film prior to laminating to the heat exchanger part. The combination of references applies the particulates to the film after it has been laminated onto the heat exchanger part. However, it is the Examiner's position that one of ordinary skill would have recognized that it is irrelevant whether the particulates are first applied to the film followed by laminating the coated film to the exchanger part or applying the particles to the film which is already laminated to the heat exchanger part because of the expectation of identical results, namely forming a corrosion-resistant surface which permits flow and removal of condensed water. It would have been apparent that heating and/ or squeezing of particulates and film prior to application to the part would have been necessary to cause adhesion of the particles to the film. The mechanism of enhanced flow is due to the presence of the particulates on the corrosion-resistant polymer film surfaces, and NOT the order of applying particulates and lamination. There is simply no rationale or evidence provided by the specification to define a difference in the outcome of the process regardless of whether the particulates are applied onto a film which is subsequently laminated to the part, or the part is laminated with the film and then the particulates added. The order of application of particulates and application of

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the polymer film onto the heat exchanger may differ, but the difference is within the purview of one of ordinary skill because the skilled artisan would have expected the same results, absent a clear and convincing of synergistic or unexpected results to the contrary. Thus, it is the Examiner's position that the amendments to claim 1 do not patentably distinguish over the prior art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Bentley et al in view of Kaneko et al by applying the particulates to the film prior to lamination of the film to the heat exchanger part because of the expectation of providing identical results of enhanced water flow due to the presence of polar particulates on the corrosion-resistant polymer film-coated part surfaces.

As to claims 20 & 22, Kaneko et al expressly discloses polar silica particles and "olefin type resins" films, encompassing conventional polyolefins. Kaneko also teaches use of a roller assembly for incorporating particles per claims 23 & 28. Surface tension/ energy of the film comprising the polar silica particulates must necessarily be increased in both the Applicants' invention and combination of references of the rejection to increase flow of condensed water per claim 26.

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8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in view of McCulloch et al US 3973510.

The references are cited for the reasons stated in the previous Office Action, and as discussed above.

Applicants argue McCulloch teaches applying the silica particles into a tacky binder layer by blowing or alternatively other means of incorporation (col. 2, 15-24). Since the particles must be incorporated in part into the binder layer, the application of the particles must be under pressure to cause the required partial embedding. Furthermore, Kaneko et al explicitly teaches roller squeezing of such particles to embed them into a polymer to form the same effect of improved wetting, which would have provided an alternate means of incorporation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Bentley et al in view of Kaneko et al by applying the particles to a tacky adhesive layer on the film as taught by McCulloch et al in order to form a polymer-coated surface with polar silica particles therein.

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Kaneko also teaches use of a roller assembly for incorporating particles per claim 28.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in view of Linford US 6132801.

Applicants did not contest this rejection and therefore it remains rejected for the same reasons discussed in the previous Office Action and as above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Bentley et al in view of Kaneko et al by coating the silica particles as taught by Linford to provide the benefits of a stronger attachment of the particles to the base, thereby reducing de-bonding of the crucial silica particles and resulting in a longer useful lifetime of the parts.

10. Claims 21,25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in view of Hayakawa et al US 6013372.

Bentley and Kaneko are cited for the same reasons discussed in the previous Office Action and as above, which are incorporated herein. Use of other polar particulates, which may be germicidal, are not taught. Hayakawa et al teaches that titanium dioxide may be applied alone, or with silica, to fins of a heat

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exchanger to enhance efficiency and preventing surfaces from being clogged by condensate (col. 8, 13-18). Titanium dioxide is inherently a germicide, and is the same germicide material taught by Applicants on page 5, 15-17.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Bentley in view of Kaneko et al by substituting or adding titania particles to the surface of heat exchanger parts as disclosed by Hayakawa because titania is taught to provide the same benefit as silica of enhancing flow of condensate off heat exchange surfaces.

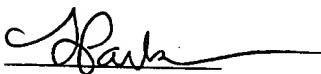
11. Claim 27 distinguishes over the prior art which does not teach nor suggest an outer coating of maleic anhydride on polar particulates for application to a heat transfer surface. The claim is objected to for depending from rejected base claim.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred J. Parker whose telephone number is (703) 308-3474.



**FRED J. PARKER
PRIMARY EXAMINER**

Fred J. Parker

May 12, 2003

fr9-738951